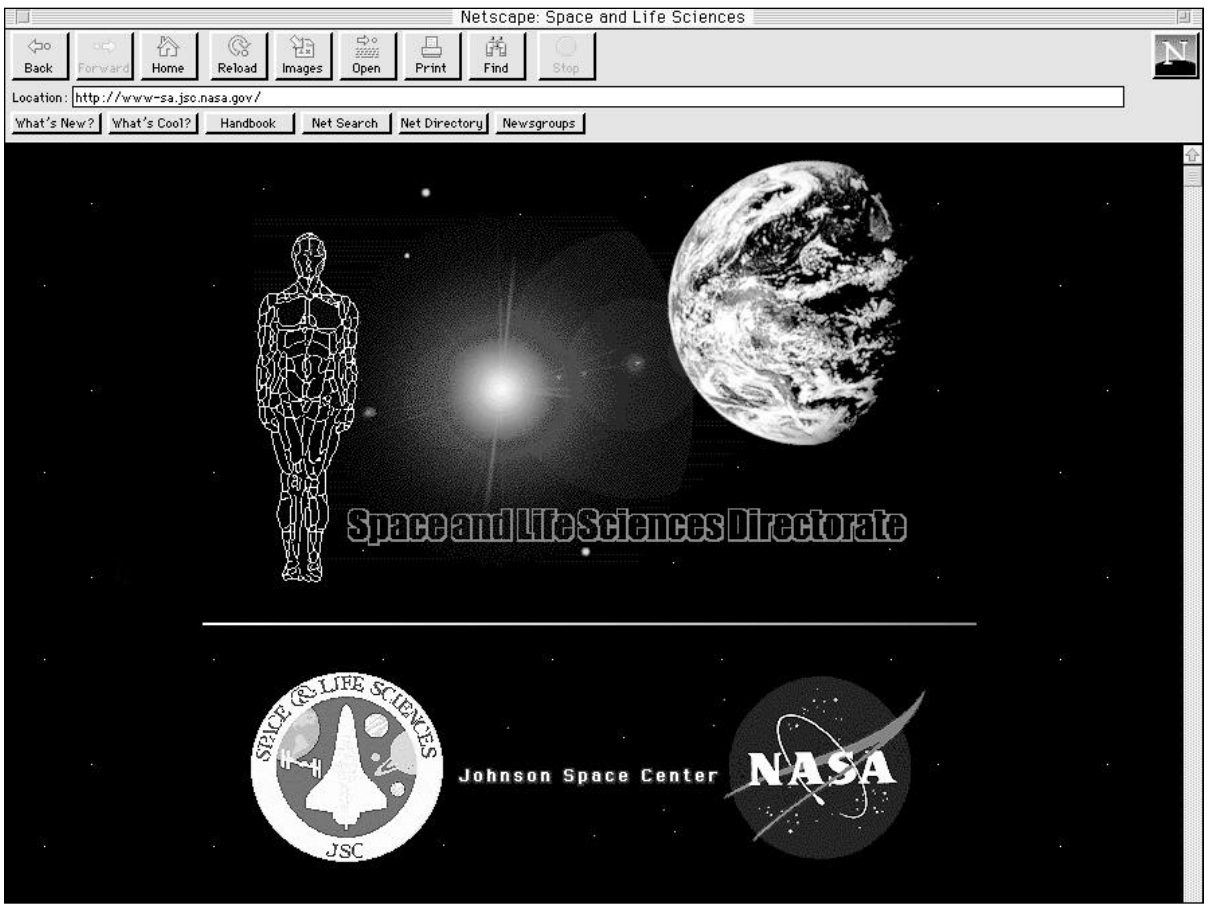
Liftoff Into Cyberspace

Instantaneous multimedia cross-reference becomes powerful tool for sharing

[Editor's note: This is the first installment in a three-part series about how JSC and its organizations are taking advantage of the Internet as a tool for public outreach and internal program management.]



By Bridget Mintz Testa

When JSC lifted off into cyberspace in September 1993, it was due to X-Window system programmer Daniel McCoy, working for what was then the Software Technology Branch (now the Information Technology Office).

"Daniel stumbled onto the World Wide Web by being the first to put out a page with JSC on it," says Chris Culbert, manager of the Information Technology Office, manager of work for all JSC Web pages, and McCoy's former boss. "I stumbled into being the Web pages manager because Daniel worked for me."

For nearly a year, McCoy actually had been waiting for something like the World Wide Web to arrive so he could easily distribute his collected library of X-Windows tools. He knew the Web(http://www.w3.org/hypertext/WWW/History.html) was an interactive hypertext medium. That means any document created in the Web's HyperText Markup Language (html)—a formatting language—could link to any other Web document like an instantaneous cross-reference. Web "documents" can be text, graphics, video, and audio.

"The World Wide Web glues together all the different protocols used to transfer files and information across the Internet (the worldwide network of computer networks) with a single interface for a user to browse," McCoy says. But while the Web had been available on the Internet since 1991, there was no easy interface to access Web documents.

The release of Mosaic (ftp://ftp.ncsa.uiuc.edu/Web/Mosaic/), the first graphical Web interface or browser, by the National Center for Supercomputing Applications at the University of Illinois, solved the problem. "Nobody used the Web until Mosaic," McCoy says.

McCoy used Mosaic to help create the first JSC home page (http://www.jsc.nasa.gov/). Its first link, "What's New," whisked users-browsers—to new JSC pages as organizations built them. The second JSC Web link was to the Software Technology Branch's lab page (then McCoy and Culbert's home branch), the first JSC organization on the Web. "There was really very little out there then," McCoy says. "I was trying to get information similar to what other centers had. My main goal was to provide links to existing information."

Shortly after McCoy's JSC page went online, the Engineering Directorate's Automation and Robotics Office Web page (http://tommy.jsc.nasa.gov/) went up courtesy of Web designer Daniel Poirot…but the two pages didn't link up for months. In January 1994, Ken Jenks, then in the Space and Life Sciences Directorate, posted the first officially approved-through the Scientific and Technical Information approval process—online white paper on space and human physiology (the current Space and Life Sciences Division page's address is http://www-sa.jsc.nasa.gov/).

McCoy

'The Web represents a fundamental change in the way people communicate. It's clearly early in the revolution, but in 10 or 15 years, we'll see a big difference.'

— Chris Culbert, manager, ISD Information Technology Office

Culbert

Today, JSC's home page has thousands of links, with about 1.5 million "hits" or connections per month. It also has a dual nature. "There are really two JSC home pages," Culbert says. "One is internal—material the JSC community needs to know. The other is public."

Visitors to the public page find links to JSC and NASA services. JSC services include Organizations on the Internet, Services by Subject, What's New, Business Opportunities, Contractors, Site Map, and the Office of the Inspector General. NASA services include these plus Public Affairs and a center map but excludes Business Opportunities and a site map. McCoy personally maintains the JSC Organizations, Services, What's New, and Contractors pages; other pages are maintained elsewhere onsite. JSC's Internal Home Page lists all public items as well as Center information, like Events, Announcements, and Personnel Search (using all JSC Directories). The samples below highlight some of the JSC home page links.

Earth Science and Solar System Exploration Division home pages (http://www-sn.jsc.nasa.gov/) are public outreach tools. Division Webmaster Eileen Stansbery says, "This is public relations geared both towards the general public and the moderately informed technical public interested in humans in space exploration. It's designed to get people excited about exploring again."

Each of the division's branches has a Web page displaying "thumbnails"—small images—in Graphical Interchange Format, along with a short text paragraph. Selecting a thumbnail yields a large, downloadable picture. Stansbery's team's approach to designing the pages was "mainly a brainstorming session about what people want," she says. "And what people want to see are pretty pictures, neat facts, and technical papers."

The Office of Technology Transfer and Commercialization's Web page (http://technology.jsc.nasa.gov/), designed by Kyle Fairchild, assists NASA technology transfer to the private sector. Fairchild says, "The site is a resource to JSC scientists and engineers who are interested in the commercialization process. It's a way to connect all the technology utilization offices. It's also a resource for the external community, like NASA commercialization centers and business."

Originally containing just a technology utilization white paper, the page today covers technology opportunities at JSC, help with Technology Assistance Requests, commercialization agreements, JSC external partners, and links to other federal commercialization resources. "The site is an entry point to more information about commercialization and getting JSC technologies out the door," Fairchild says.

The Resources Integration, Cost Estimating and Processes Reengineering Team's page (http://www.jsc.nasa.gov/bu2/) features the first parametric cost estimating reference manual on the Web, focused on NASA processes and guidelines. Economist Kelley Cyr designed the page to be part of his team's strategy of working closely with the engineering community to improve cost-estimating.

"Engineers need to know enough about cost estimating to provide us with the right data," he says. "With the Web, that information is instantaneously available at your fingertips."

The Science and Technology Information Center's popular internal page (http://stic.jsc.nasa.gov/) is an engineering gold mine. Henri Daumas, Information Manager for the Information Management Branch in Information Systems Division and McCoy's current technical monitor, created it in 1993. Since then he's populated it with myriad links to JSC documents and engineering drawings in electronic formats. Sources include the Science and Technical Information Center, the Engineering Drawing Control Center, the Shuttle Drawing System, and other repositories in Bldg. 227. "We don't know how much information is out there," Daumas says. "This job will never end. But we can capture the best. We're at about 10 percent right now." His ultimate goal is to integrate dozens of center repositories via the Web, saving paper, money, and time spent searching for and retrieving information. "Web tools give me total flexibility in distributing information," he says. "Your only constraint is your imagination."

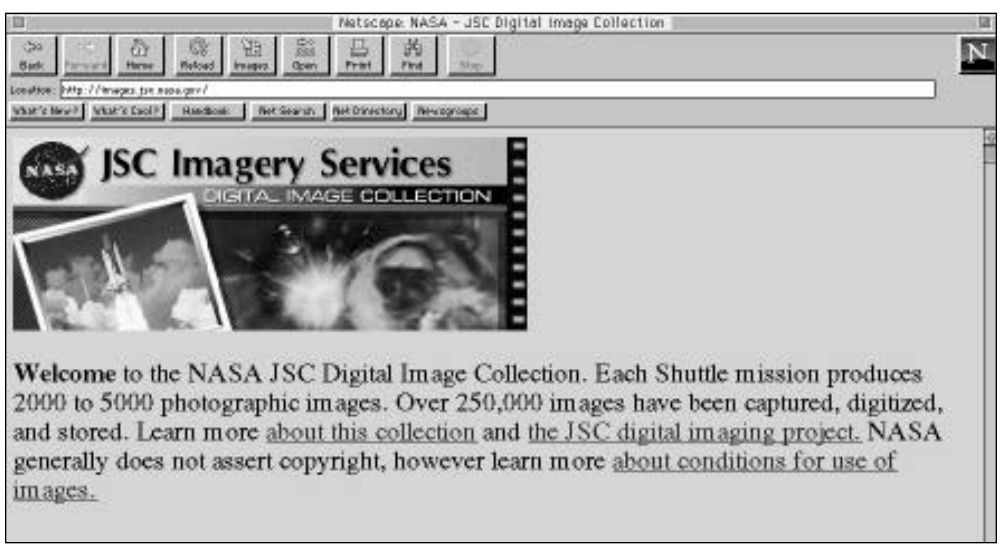
That's assuming you have Web tools, of course. Culbert says Web access is just one of the technical issues he and his team are struggling with in getting JSC fully online. "JSC is pretty good, but not everybody has browsers and network connections yet," he says. "There are really old computers on-site that can't even run this software."

Another issue is Web page development. With more and more JSC organizations heading for the Web, Culbert wants to simplify the process. "We can't build everybody's home page," he says, "but we can help with html. We're also looking to put as many home pages onto a central machine as possible so people don't have to worry about security, access, servers, etc." JSC's current Web server is Krakatoa, a Sun Server 4/470 located in Culbert's Bldg. 12 lab. "Krakatoa was a development machine," Culbert says. "It's now a little underpowered and we're working on getting a higher-powered CPU." Krakatoa also served the International Space Station Web page from March to October 1994, when heavy traffic force the station page to its own server. Culbert says his organization, especially McCoy, helped the station page group get started. "They learned real fast," he says. "We both learned a lot from each other about security."

Learning and changing fast is essential on the Web—static Web pages quickly lose visitors. So Culbert and his team are revising JSC's Web pages to keep up. The nearly identical internal and external pages will soon sport different looks, with external page content managed by the Public Affairs Office. That follows a new Headquarters mandate issued in August. Kelly Humphries, PAO's Information Services Team leader, says the new public pages will be customer-based, leading visitors quickly to much of the same information available on the internal pages base on who they are-educators, students, news media, scientists or business people, for example.

Another new mandate is the Policy on the Release of Information on Unprotected Computer Systems; it guides JSC employees on what the NASA information is appropriate for placement on publicly accessible computers. The Information Systems Directorate, the JSC Chief Information Officer and PAO are collaborating on the policy's development.

Why go to so much trouble for this new technology? Culbert says, "The Web represents a fundamental change in the way people communicate. It's clearly early in the revolution, but in 10 or 15 years, we'll see a big difference in the way we communicate." ❑



Top: The Space and Life Sciences home page showcases the directorate's programs, research and facilities, and explains that its mission is to be the world's leader in understanding the space frontier and the opportunities, capabilities, and limitations of humans living and working on that frontier. Above: The NASA JSC Digital Image Collection contains mages taken throughout the Mercury, Gemini, Apollo, Skylab and Space Shuttle Programs.